

The National Geographic Magazine

AN ILLUSTRATED MONTHLY



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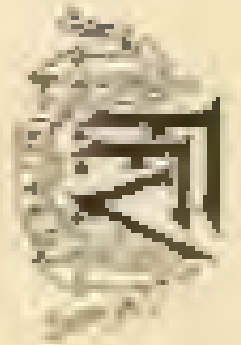
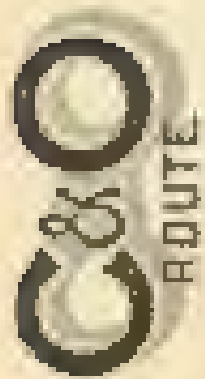
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A Washington player has at length invented and put upon the market at a very low price a little device which admirably answers the purpose, and at the same time serves as a pretty and useful table ornament, marker, and pencil rest. It is called the "Cosmos Couplers," and consists of a little polished wood tablet with a metal key-board that can be clamped down on the score in such a way as to bring 24 little metal plates over the 24 spaces in the "score" columns of the card, for use in concealing each first score as soon as recorded and until the hand is replayed (in duplicate whist) or the entire series finished (in compass whist).

Whist players will at once see the advantage of this new method of keeping the score, as it effectively prevents their opponents at the same or another table from taking advantage, either by accident or design, of a knowledge of what the hand is capable. The trouble with duplicate whist, especially, is that the replay is liable to be influenced by memory of the cards and score, and anything that helps to confuse such recollection is a great gain in fair play.

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N					E				
S					W				
HAND	COMPASS WHIST					HAND			
	SCORE	TOTALS	TRUMP	OPPONENTS					
	DUPLICATE WHIST								
	SCORE	GAIN	TRUMP	GAIN	SCORE				
1						1			
2						2			
3						3			
4						4			
5						5			
6						6			
7						7			
8						8			
9						9			
10						10			
11						11			
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FEBRUARY 1907

No. 2

CRATER LAKE, OREGON*

by J. B. HARRIS.

United States Geological Survey.

It is, out of crater lakes there is but one. Crater lakes are lakes

Germany, India, Hawaii and other parts of the world where

The one in the United States belongs to the great volcanic

of America, which are especially noticeable in such natural wonders

by comparison with the beautiful and sublime landscape.

According to W. G. Steel,† the lake was first seen by white men in 1853. It had long previously been known to the Indians, whose legends, as related by Steel, have contributed a name, *Lake Wablick*, to one of the prominences of its rim. They

*Published by permission of the President of the U. S. Geological Survey.

† *The Mountains of Oregon*, by W. G. Steel, 1883, p. 14. ‡ *ibid.*

and Mr. Bowley, who, in 1872 with Captain O. C. Applegate, of Monroe's force, and three others, made a boat trip along its borders and named several of the prominent ones on the rim after members of the party.* Mrs. F. F. Vowler saw the lake in 1875 and briefly described it in "Atlantic Artist."[†]

The first Geological Survey party visited Crater Lake in 1883, when Everett Hayden and the writer, after spending several days in examining the rim, climbed logs over the side to the waters edge, lashed them together with ropes to make a raft, and paddled over to the island. In 1886, under the direction of

in the geological history of the lake of which he has given, for his own satisfaction, and as a too brief account.

Under the instigation of the "Blissians," a society of mount-

Survey

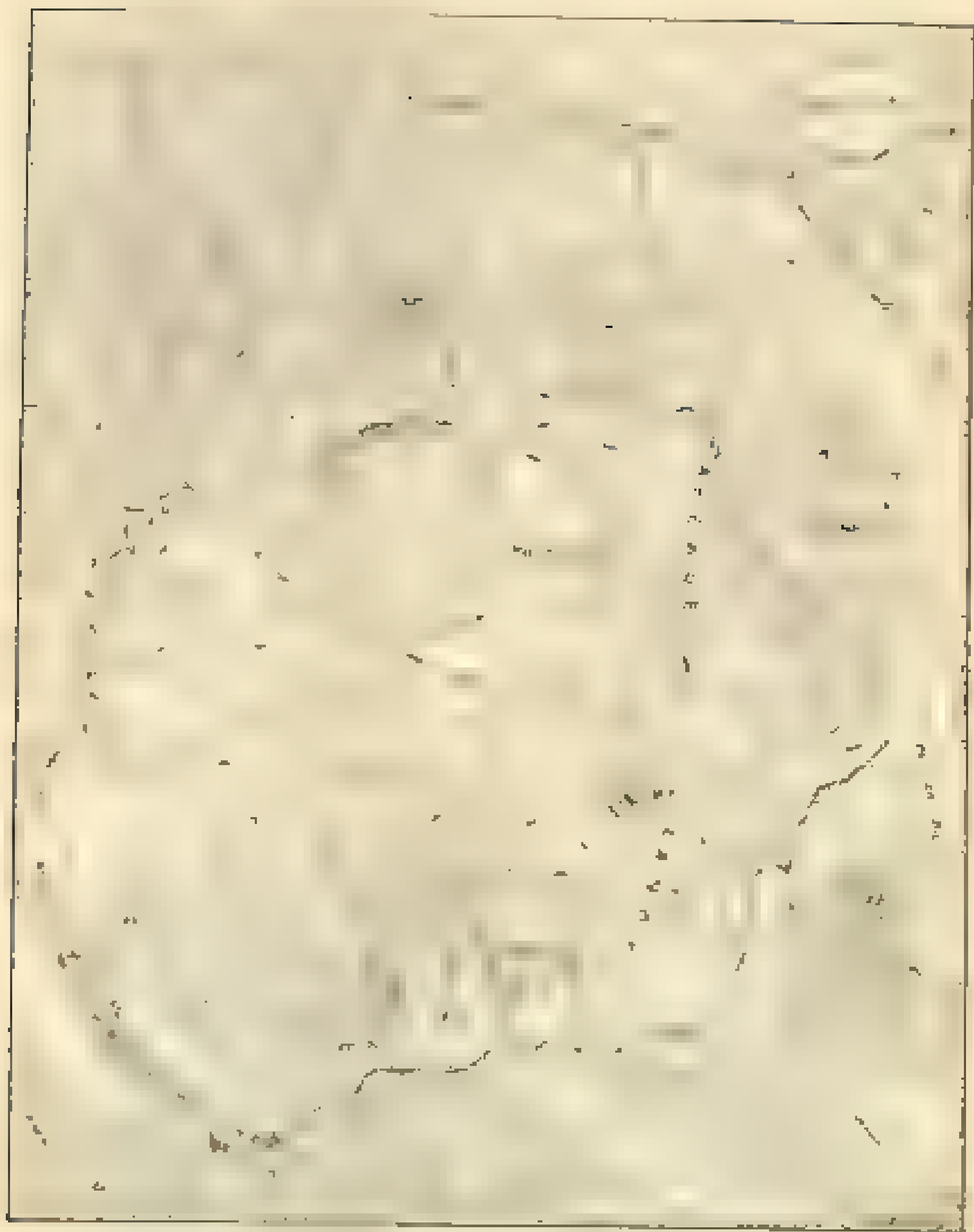
Crater lake is deeply set in the summit of the Cascade range, about 6½ miles north of the California line. As yet it may be reached only by private conveyance over about 80 miles of mountain roads from Ashland, Medford, or Gold Hill, or two

Oregon. The valley marks a line between the Klamath and the

the east. The journey from the railroad to Crater lake affords a good opportunity to observe some of the most important

to the surface. It is surrounded by volcanic cones and cinder cones, which are generally smooth, but sometimes rough and rugged.

* The names Wawinona, Tiam, and Vidua, which appear on the map of the lake, have recently been adopted by the United States Bureau of Geographic Names.

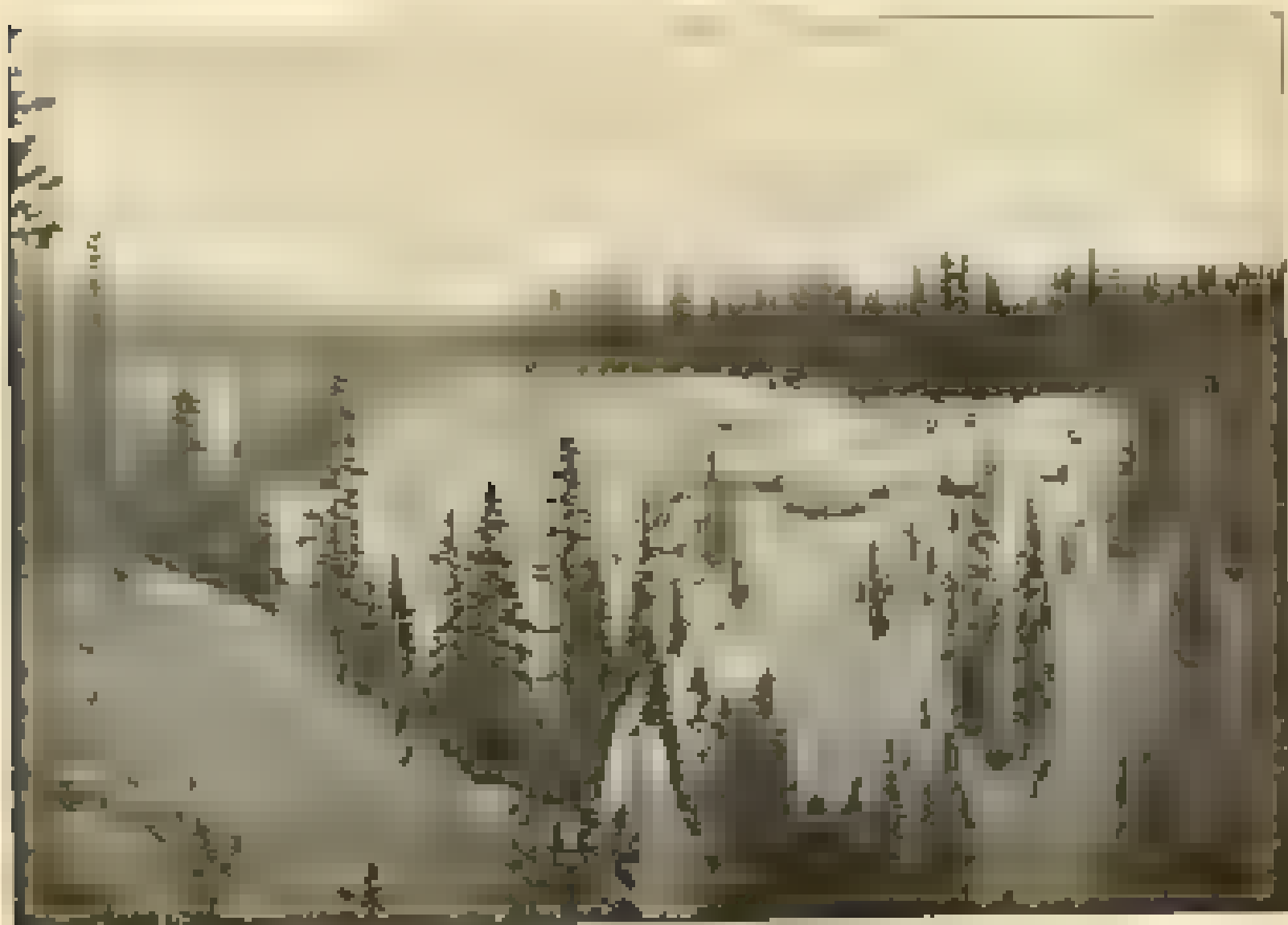


The cones are very greatly in size and are characterized with variety. Mount Mazama has been an active volcano. The fragments cut out by erosion or action have fallen about the volcano, or have been blown where they are and laid up under cover. From the

level of the country between the cones. From many eruptions, both explosive and effusive, many layers of lava, tephra, and local, have been laid down. Wherever we go, we find a small structure, as the cones are, and we should find that each layer of lava and tephra has a structure, a structure well illustrated in the lava flow at

Agassiz and by the head of the road at the mouth of the lake. The road passes within a few miles of Mount Mazama. The lake of Klamath Lake, however, is a fine thing. After following the road some twenty miles above the lake, it passes the eastern slope, and the eastern edge of the lake is the foot of the mountain.

From Medford or Cold Hill, the trip is a little shorter by the



View of Crater Lake from the rim of the caldera.

CRATER LAKE, OREGON

View of Crater Lake from the rim of the caldera.

of distance lining the valleys. Across these plains Arun creek and Hogue river have carved deep, narrow canyons with fairly barren walls when the roads follow for some distance.

Approaching the lake from the south, the observer sees a long, slender of granite peaks rising about a thousand feet above the general crest of the range on which they stand, but not until

begin to feel the steepness of the ascent. The way winds over a large number of hills and with lava flows exposed with scattered with fire. Arriving at the crest, the lake is at its most beautiful

Thence the view opens a sharp descent with a fine view of the lake and the surrounding mountains. The eye beholds 21 miles of the lake and the surrounding mountains.

Water in which the mountain walls rise with the surrounding mountains and greatly reflect the light of the sun.

ruined western edge and the steep but symmetrical mountain cone and the eastern portion are very suggestive of volcanic origin.

intriguing the earlier stages of its geological history.

The outer and inner slopes of the rim are in strong contrast, while the cone is gentle, ranging in general from 10° to 15°, the other is abrupt and full of cliffs. The outer slope is a series of

of a great low cone in which the lake is contained.

The rim of Chitan lake, measured from the N. E. corner and

parallel significance when we come to consider the volcanic rocks of which the region is composed. The rim is raised by ridges

in connection of the rim crest is 1425 feet (from 6,720 to 8,225)



side cover peaks rising above 5,000 feet. The crest generally is

the lake, with the exception of short intervals about the notches in the outer range. At many points the best position is on the inner side of the crest, where the open slope, generally well marked with deer trails over beds of talus, affords an unobstructed view of the lake.

also on the slopes of Lindo rock, Round Top, Kerr Notch, and Eagle ridge, thus completing the outline of the lake. On the adjacent slope toward the lake the entire rocks present rough fractious surfaces, showing no trace. The glacier front of the rim is a feature of its outer slope only, but it reaches up to its very crown. It is generally strewed with stones in these lower parts, that surround the crown of the rim, and not having the crown from above,

exposed extending above the snow line to afford a gathering ground for the snow that it may accumulate, and if not the influence of gravity would develop glacial ice lowered down on the mountain slopes. It is evident that during the glacial period Timber Lake did not exist, but that its site must have been occupied by a mountain to furnish the conditions necessary for the extensive glaciation of the rim and the mountain of the glacial period must have been that the peak was a large one, rivaling apparently, the highest peaks of the range.

The Mazamas held a meeting last summer at Crater Lake in connection with the Crater Lake clubs of Medford, Ashland and Klamath Falls, of the same state. Having found that the high mountain which once occupied the place of the lake was named Mazama, they celebrated it with appropriate ceremonies, Mount Mazama. The rim of the lake is a remnant of Mount Mazama and when the name is seen in the paper reference is intended more or less to that part which has disappeared.

The outer slope of the rim, so well known from Victor rock, although precipitous, is not a perpendicular cliff. It is made up

than the vertical. The cliffs are in ledges, and sometimes the whole slope from crest to shore is one great cliff, but about fifty vertical, it is true, but yet at so high an angle as to make it far beyond the possibility of climbing. But on the south-east, and Lindo rock, on the northern borders of the lake are the greatest cliffs of the rim. Besides cliffs, the other elements of

at a few points to approach the lake, and with great ease, but you, once being taken, are in little danger. The highest of the lake the inner slope, easily seen from Victor rock, is pretty well

the northeast corner of the lake under the palisades. At the

spot the slope is a *thorpe*, from crest to shore.

The best views of the run are obtained from a boat on the lake.

and structure of the cliffs. They are composed wholly of vol-

canic material and away from the lake on all sides. Just
 from a volcanic material (lava) exposed on the lake, these cliffs

run are of volcanic origin.

On arriving at the water's edge, the observer is struck with
 the fact that there is no beach. The steep slopes above are
 a face of the lake, and the water is deep.

in the snowdrifts near the crest a small deposit of rock
 is visible, forming the deep blue water to pale green.

As the boat skirts the western shore and passes toward the
 rock, the layered structure of the run is evident. On the whole

run, all the flows exposed upon the inner slope, that of
 the rock is most prominent and interesting. In the run lake is

slope of the run. From either side it tapers to a thin edge

and one wonders how much farther it may have extended
 from the crest. Beneath the rock the outline of the valley is
 a cross-section of the lake, and it reveals many layers of lava
 layers forming the run down to the water's edge. The direction
 of flow in this great lava stream is so obvious to believe that it was

the lake. Every layer of lava in the run is a circle, dipping

along down exposed upon the inner slope of the run and tel-

lows toward the center we can reconstruct in fact the
 great volcanic mountain that once occupied the place of the
 latter—that is, Mount Mazama and like Shasta or Mount

between a great land mark of the region. Proceeding eastward from Lake rock, the rim loses somewhat in height, and at the east of Craterwood cove one sees the remarkable appearance of a lava stream descending westward along the rim. It is the only one that has followed in this way and its action here is much different from the flow quarries of Mount Mazama.

The Palisades are only a few feet in elevation above the lake, and are composed almost entirely of one great flow. The stream of lava extends northeast from this portion of the rim

and great falls south of the lake, where the lava is broken and broken into pieces.

Round Top is a dome-shaped hill over the eastern end of the lake.



The relation that Mount Mazama was an active volcano during

the time of the eruption is shown by the fact that the lake is now a

new lake may account in some cases for the fact that the lake is now a

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CATER LAKE



... to do some work in that region
... quite unlike those of today. They were carved out of
... from a point of view which
... as they are to be used for the same
... rather than a small water level, according to

the former reality of Mount Ma

The Plateau is a craggy, broken surface
... under the cliff. Its rugged walls, with a rocky floor

... to the present day, and a number of the

Rocky Mountains

... the old. Whatever is history, the old

... was

... of the old, and the old

... for the old, and the old

... through the fissure to the surface. In the old, the old

lakes often in total and the fissure basin is filled with solid lava and forms a dike. The best example of this sort about Crater Lake appears along the inner slope recently north of

Mount Knaprock standing on ridges varies from 5 to 25 feet in thickness and cuts the rim from water to crest. Dikes are most numerous in the old or portions of the rim under Indian rock

the lava of which that rock is formed. Dikes occur at intervals all around the lake and radiate from it, suggesting that the central volcanic vent is in which they issued must have been Mount Mazama.

There is another important feature concerning the kinds of volcanic rocks and the order of eruption and distribution about the rim of Crater Lake. That is of which is thrust to the surface

mainly toward the water's edge, now all lavas. The newest ones forming the top of the rim is Indian rock, It and Top, and the Rugged Crest about the head of Chetwood cove, as well as the Central Cap are chiefly basalt. Other lower flows, most of which are aged from 1000 to 10000 years come from the outer slope of the rim, the lavas. The eruptions began with lavas of medium

richness of iron and poor in silica below, giving a composition to the rocks of this great volcanic vent that make them of interesting and of study. Furthermore, the remarkable opportunity afforded by the dissected volcano for the examination of its structure and succession of lavas is unique. It would be stated, before discussing the kinds of lava, that there are some rhyolites in the San Clark cove, south of the lake that appear to be older than the basalt on the north side, and that the first lava of the region on Wizard Island is of the same

The general and structure of the rim clearly establish the

as to the exact form and size. It is given from the fact that Mount St. Helens and the rim of Crater Lake have the same diameter at an altitude of 6000 feet, and that their lavas are similar. It has been some reason be inferred that Mount Mazama and Mount

an equal altitude, but the placement of the rim is such as to require a large peak for its source.



Vertical and Horizontal Scales the same

In the accompanying figure is given a section of the lake and its surroundings, with the volcano about as of Mount Mazama. Wonderful as the lake, circumscribed by cliffs, may be, it serves but to emphasize in part the greatest wonder—that is, the enormous pit.

by some geologists is 4,000 feet deep. It extends from the top of the rim half way down to the general level, and nearly a square mile of its bottom is below the level of Upper Keweenaw lake at the eastern foot of the range. The volume of the pit is nearly a dozen cubic miles, and if we add the volume of the lost Mount Mazama, that amount would be increased by at least one half. How was it possible to remove so large a mass and in the process develop so great a pit?

The pit is completely barren, so that it cannot be regarded as an effect of erosion. The volcanic origin of everything about the lake would suggest in a general way that the great revolution must have been wrought by volcanism, either blown out by

volcanic action, however, and some of them are occupied by lakes of the kind usually called crater lakes. This produces in this way, of the fragmental material blown from the pit.

etaphed from Mount Mazama before the pit originated. The

is no fragmentary deposit on these mountains it is evident that there is not any way over to indicate any explosive action in connection with the lava out-pour of the pit.

It is only by actual understanding the process of origin of the

active eruption of Mount Mazama. At such a time the eruption of a steam material rise in the interior of the mountain and it overflows at the summit or burst upon the sides of the mountain and escapes through fissures. Fissures formed in this way usually occur high on the slopes of the mountain. If instead however, an opening were effected on the mountain side at a much lower level—say some thousands of feet below the summit—and the molten material escaped, the mountain would be

eroded, might cave in, and a superfluous reservoir

but which lava, for Kilauea is yet an active volcano. In 1881 there was an eruption from the slopes of Kilauea, 27 miles distant from the lake and over 1000 feet below its level. The eruption

sank away in connection with the eruption to a depth of 185

between and, as the molten column rises again to

and the subsidence is not always accompanied by an outflow of lava upon the surface. Sometimes, however, it gushes forth as a great fountain a hundred feet or more in height.

level of the lowest bed of ice like reaches the surface within 15 miles to the westward. That Mount Mazama was engulfed is clearly suggested by the behavior of its final lava stream. The greater portion of this lava flow descended and spread over the water slope of the cone but from the thickened part of the flow it rose to fill an old valley at the head of Clearwater above the

et al. other small volcanic cones might be found. This suggestion is borne out by the soundings of the lake, which appear to reveal two other cones, but they do not rise to within 400 feet of the surface of the water. It is evident that the volcano

Originally it may have been much more than 4,000 feet deep. Even the pit with water-tight walls, there is no indication

the southeast, where the region is traversed by extensive breaks in the rocks, and a small stream excellent stage

transparent that even on a hazy day a white dinner plate is

The level of the lake oscillates with the seasons. During the rainy winter it rises, and in the summer it falls. In August last

at the rate of one inch for every five or six days, depending somewhat on the conditions of the weather. The Mexicans have

of observations may be obtained in the future.

Mr B. W. Evermann, of the U. S. Fish Commission, who was

is in operation. At 1 p. m., August 22—

The temperature of the surface water was

At a depth of 1,043 feet the temperature was

At a depth of 1,600 feet (on the bottom) the temperature was

temperatures in a body of water

Apart from its attractive scenic features, Crater Lake affords

struction of the people.

BY TIMOTHY D. BENT

Assistant Commissioner of the General Land Office

No question of public policy had been raised in connection with the disposal of the public lands. It is evident

the republic was founded. It has been asserted by some that

much. On the other hand it is claimed that it was not until

when the Treaty of Peace was concluded between Great Britain

Indians, belonged to certain of the colonies. This fact was one of many obstacles to the ratification of the Articles of Confederation. It was removed by the cession of these lands to the United States. By such cession the United States became the proprietor of a territory greater in extent than France or Spain. This formed the nucleus of the public domain, and the same can be

government except Alaska.

vided for the organization of the territories into states, with

for settling the title in each section to the purchaser. Upon the

ordinarily reserved by no compact in conformity therewith.

The excesses of territory made to the United States by the several states were upon the condition that the land should be

tion of the public debt. Settlement upon the public domain was not only discouraged, but was actually forbidden. In

valuable and expensive territory granted by special act of Congress prior to the adoption of the Constitution.

In 1790 Mr Hamilton, then Secretary of the Treasury, sub-

mitted to the consideration of the House a bill, which was passed, which has formed the basis of the public land system. A legis-

lation upon this subject, until the Homestead Act of 1862, was not completed. The raising of revenue from the sale of the land-

was the main object, which, as a financial operation, claimed primary attention, the latter, the accommodation of the frontier

was. Upon this plan our public land system was laid. It provided for the disposal of the public domain at public or privately private cash sales, and by the allowance of the preference right of purchase to actual settlers under the several provisions

which were until its repeal by the act of March 3, 1861.

While the pre-emptory right was generally considered as a

valuable and to provide a tract of public land, with the intent of making a permanent home, it was practically only the extension

tion of railroads and other works of public improvement, the

THE UTILIZATION OF THE VACANT PUBLIC LANDS 31

containing forests, the disposition of the public lands was not

original with the lands of the grant were doubtless in part for

It was not until the solution of the question of free land for the people, which resulted in the act of May 2, 1892, that the general policy of 1863 for arid lands was changed.

The amended law provided that any citizen who is the head of a family or who has arrived at the age of 21 years, may acquire title to the lands of arid by residing upon and cultivating some of

it as proof, free from all cost except the land office fees. Since the year 1863, when this law went into effect, up to the close of

the closing season of 1915 141 acres

How far this beneficent act has demonstrated the wisdom of the measure and fulfilled the expectations of its authors must be judged by the growth and prosperity of the country since the period of its enactment. It is true that it went not

to turn only the early period that witnessed the extensive grants made for the construction of the Pacific railroad and other important works of internal improvement, but this important factor, with the aid of the railroads, was mainly instrumental in converting the land covered by arid and wild, waste and treeless country into a rich and fertile and watered, adding immensely to the material wealth and prosperity of the nation. Thus the government thus not only derived larger revenues from its land sales than it could have acquired from the cash sales of its lands.

It is unnecessary to give a detailed statement of the extent to which the various laws have been and are being carried into

effect which such disposition has been governed. It suffices it to say that about 217,000,000 acres of land have been sold, for cash, including as many as almost no entries for which the government has received about \$280,000,000, and that this money with the grants made in the construction of railroads and the donation of lands for educational purposes and for rural improvements,

disposed of by the government.

over which the general land laws have not been extended,

LANDS ARE NOT IN A REGION WHERE THE RAINFALL IS NOT SUFFI-

that the soil is in the poorest state, and it is subject to dis-

semination are contained, the land is valuable, and water if a land can be brought to an agricultural state, a permanent settle-

ment can be expected. Hence the question is forced upon us, Are

the conditions that confront us in the arid west?

The act of March 3, 1877, authorizing the entry of 640 acres of desert land, conditioned upon the payment of \$1.25 per acre and the reclamation of the land by conducting water thereon.

reclamation

Individual efforts of the settlers have practically been pre-vented by settlers under the Homestead and other general land

no stated that they cannot be reclaimed by means of the com-

of practical application to the arid region as its operation is

But a more serious problem is how to secure the reclamation of the largest possible portion of the arid lands of the United States.

and others of the same kind, but of permanent transportation to sea are right to the land.

If the waters of the potential streams which are wasted during the winter months could be stored and reservoirs could be constructed for a period to store waters, the area of territory susceptible of irrigation could be largely increased. As the irrigated land is far in excess of the available water supply, the land to be irrigated would also be selected with a view to the most economical use of the power, so that the available land should be irrigated in order of its agricultural fitness, and the remaining lands be left for disposition for other uses.

The importance of observing the strictest economy in the distribution of water and the adoption of measures to

improve the report of the expert Commission appointed by the United States Senate in 1889 (see under the subject of the irrigation and reclamation of the arid lands). It says:

the irrigable lands and waters in extent. The area of the arid region which can be irrigated is a vast field for development. It is given as a fact that all the waters that can be used are necessary to meet the possible irrigable land. It is therefore extremely necessary to select the lands to be redeveloped on the basis of the economic and agricultural demand. This is possible by irrigating lands on the mountain and on the high plateau, and if the water is used there it cannot be used below and these are the best lands to make the best use of the power. The arid lands are fertile, and the variety of agricultural products that can be produced is great, being chiefly hay and vegetables. To use the water on such an area is a waste of water, and to drive agriculture into the arid to drain the people engaged therein to a dry life is a disaster.

It is therefore in the interest of the greatest number of people that the action taken of the arid lands should be established on the basis of a region. The values and power below are given and it is found that the variety of products is great, and if the waters are used on the best lands they will give out to a proportion

If this is the situation with which we are confronted with regard to the vast public lands in the arid region, then it must

have been left to an agricultural use. If it is regarded as a part of the general and economical development of them, and with a view to arriving at the greatest benefit for the state and nation.

This may be accomplished in three ways: (1) by the construction of reservoirs and irrigation works and the adoption of an irrigation system under the direction of the general government,

2) for up to the agency of irrigation companies and also by the states controlling the waters within their respective borders.

On March 2, 1899 Congress passed a joint resolution authorizing the Secretary of the Interior through the direction of the Geological Survey, to make an examination of "such portions of the arid region where water is scarce for any number of years, as to the actual advantage of the storage of water, the topographical advantages of construction, and capacity of reservoirs, and such other facts as bear on the question of the storage of water for irrigation purposes." This resolution was followed by legislation making appropriations to enable the Secretary of the Interior to make the necessary examination, and he was authorized to select sites suitable for the storage reservoirs created, listed by the resolution, which were to remain segregated and reserved for irrigation, and settlement and other uses were provided by law. Under this authority 19 reservations have been selected and the lands covered by such selected have been reserved from entry, settlement and settlement, but at the same time no provision has been made for the reclamation.

The plan of reclamation through the agency of land and irrigation companies would not, in my judgment, be commanded by the people, and although it might be effective in production

tion by the water that would be stored, yet it would hardly be possible to make such limitations and restrictions, and a grant of such power as would absolutely protect the settler against extortion and oppression.

The third appears to be the most feasible plan for reclamation of the arid lands. The right to the use of the water being under the absolute control of the state, it would, if controlled in a land also, be controlled so that direct and govern the appropriation of it as to see that by a judicious selection of the lands to be irrigated, the best economic and practical use. It would go all to an extent to check the waste growing out of faulty construction of canals and imperfect systems of distributing water. The settler on a tract of desert land who has acquired a right to the use of water is interested solely in the application of it to his particular tract, with no responsibility for his own small use. The water is a common, but the water is scarce, and we expect

disposed of it can be accomplished more effectively by the state than through the general government or other agencies.

The state of California has adopted a policy, based upon the principle of state ownership or control of public waters, which provides for the construction of works for the storage and distribution of water for irrigation purposes. This law, known as the Wright law, which has recently been declared constitutional by the Supreme Court of the United States, and now in operation, has given to the agricultural areas. It provides for the organization of irrigator districts wherever fifty or a majority of the owners of lands susceptible of irrigation of water from a common source and by the same system of works desire to provide for the irrigation of the land. It

also provides for the creation of a board of directors, who are empowered to purchase lands, water and water-right and to construct the necessary reservoir and irrigation works. It also authorizes the creation of bonds to raise money for the construction of such works, which bonds are to be paid out of revenues derived from annual assessments upon the real property of the district, and all such property subject to taxation by the state is liable to such assessment. It does not attempt to provide, but merely by the practical features of the law, to show how to justify it.

system and from the same common source, so that if there fore the materially enhanced in value by the construction of irrigation works at the expense of the inhabitants of the district. Although the government would not be liable to contribute to it for the reason that the government lands are not subject to taxation by the state, and are therefore not liable to the assessment. This may, however, be remedied by levying a tax upon the lands owned by the state.

In the 1901 report an average of about 75 per cent of the land in the lands of the government. In Nevada about 60 per cent of the area is vacant. These lands constitute a valuable source of the revenues of the state. With its taxable resources so diminished it is impossible for the state to maintain a system of irrigation. They should be so disposed of as to make them available as a source from which the state may increase its revenues.

Some of the arid region have established laws for the acquisition and protection of riparian rights, based upon the principle of priority of appropriation. This has been rendered necessary by the failure of the general government to form a national system for the protection of the rights of parties in

to secure the economical utilization of the water. Under these laws, which do not in any material respects restrict private land ownership, but which afford a system of all-Irrigation water rights, and which afford a voluntary irrigation by means of water rights. It could be remedied only by giving to each state control of its own lands, for the reclamation and disposal of under their separate systems.

The present laws that would permit to the state through the control of the land and water, and the measures, authorized by the act of August 9, 1890, known as the Carey Act. The law appoints a secretary of the Interior to coordinate with any of the desert lands states to control the states, free of cost, and to make, in accordance with public law 260, as the state may require, be irrigated, reclaimed, improved, and cultivated by national means. It also authorizes the state to make necessary contracts for carrying out lands to be reclaimed, and for the

purpose of other water reclamation. The state is not authorized to lease or dispose of the lands except to secure the reclamation, and to carry out the reclamation.

It is in the nature of a grant of land to the state and is a limited upon certain conditions. It is also stated that the reclamation shall be accompanied by private capital, and as it cannot be sold and cannot be disposed of, and it has been pointed out that the state is to give the state with full control over the lands to be reclaimed, to design them as security for their reclamation, and to use it as a trust for the construction of works in the most favorable manner. If this law were not passed, it would be for the granting of the lands to the state upon application, leaving the state free to accept of the reclamation and to pledge the lands as security for the same, and be of private land, and under its provisions the state might be enabled to secure the reclamation of all the lands within the limits of the United States. As it is, but two states have applied for its benefits, and the possibility of the scheme for the reclamation and disposal of the public lands is yet to be ascertained.

With the exception of reclamation, and the law of 1890, which is a reason, would not yet the case of these lands to the states, and may we not go further and in point of there is any reason why the trust imposed upon the general government for the disposal of all the public lands may not safely be delegated to them? The reason of the Northwest Territory was made upon the express condition that the ceded lands should be considered as a com-

now sold for the cash and be sold of all the sales and should be disposed of for that purpose and for no other purpose whatever. During the existence of the Land Commission and in the earlier days

could only be disposed of for the purpose of revenue for the redemption of the public debt, and that any other disposition of them would be a violation of the trust.

But the policy has gradually changed from a system of sale for revenue only to that of free homestead for the people. For the past twenty years the tendency of legislation has been to repeal all laws authorizing the purchase of the public lands by any entry and to substitute them to homestead entry only. In 1880 a law was passed withdrawing from private sale entry all the public lands except in the state of Missouri, which was followed by the act of March 3, 1891, repealing the preemption law and declaring that no public lands of the United States, except those owned in trust or other reserve for or reserved for disconnected tracts and sections and other lands of a special nature having local applications, shall be sold at public sale. The purpose of this law is later provisions are so general as to repeal the earlier laws except as to homestead entry for three years after the

entry reservation containing more than 1600 acres are now subject to homestead entry only. The purpose of this act therefore no longer to be disposed of with a view to revenue but to be reserved

years ago a great part of the vast territory west of the Mississippi river was Indian country to which

unorganized territory. Since then all of what was originally

been extended as to all the territory formerly open and as

from time to time states have been admitted into the Union

entire country is now divided into separate territories. With

THE MAZAMAS

The first mass campaign took on the form of a "March Against Hate" on 3 May 1990. A number of prominent people were on and the demonstrators, although not necessarily for sexual equality, as the majority of my contemporary anti-homophobic friends. The march was not at any point, as some have claimed, was peaceful, at least to the (and not) homophobic protesters. I just had to remind the marchers. We as bisexuals one of the homophobic side is of the marchers, was a point to show that we are not homophobic.

The objects of the society are: to obtain explanation, the water is of foreign and domestic, and to use the same in the construction of an artificial gunpowder. In the year 1855, when the State was in a panic about the T. T. Bank. We were secretary, parties were nominated as follows: Monroe Baker, Treasurer, Adams, Wood, and Jefferson and elected a committee by ballot, viz: to, owing to the sickness of the money men, the office part of, in progress can be and be carried out.

At the Mc C. H. St. was an presidential on 1 hour. Earl M. W. V. as the secretary, I a society on named as was the work in the spring of 1944 as publishing the first number of a historical magazine. The magazine, a record of reminiscences of the Pacific Northwest. The publication continues besides the presidential addresses, the reports of the historians for each and fifth, and other matters relating to the society, local history papers. The volume of 1944 is titled, by Thomas Howard, was an issue 272 pages.

[illegible]

The Mingo name section of August, 1950, was to Crane Lake, to connect from with the Crystal Lake (Lake of Newford) Ashland, and Klamath Falls to southern Oregon. In all, nearly 300 people attend by the meeting a number of them had been at Mount PUL. By evening groups of 1

* Also See: [Cinema](#), [Media](#), [Film](#) *

These investigations indicate that the effectiveness of CFCs is linked to the way they are utilized within the production and marketing of their products. In the marketing of the Ford Taurus sedan, for example, the focus is on quality and

ten persons. Mr C. Hart Merriam chief of the Geological Survey of the
Agricultural Department, assisted by Vernon Bailey and Edward A.
Mearns, a large number of ornithologists, botanists, and lake and
game warden, and Mr F. V. Coville, the Department Assistant Secretary,
by Mr Hart, and a large collection of fish. A geological party under
the charge of the writer prepared a geodetic map of the region. The
heads of all the government stations, as well as many others, were called
upon for the plates, letters, addresses, or receipts or exchanging the same of
course. So and popular interest, especially in making the water lake. The
present map is required any of us by the National Geographic Society.
Much was received, and a number of the great collection of the Museum was
the result. After the close of the day a number of ornithologists,
aside from the government parties, were a number of botanists and
zoologists, as well as geologists and professors of various institutions.

the lake. As a whole, the ground is then a given surface, and is free to rise or fall, not only in the widespread or recent amount of water present, but also in the fluctuating masses of the Mount, which is a variable in the movements of the lake, both from local action, the formation of ice, &c.

GEOGRAPHIC LITERATURE

Atmospheric Chemistry. By Ralph A. Taen, Professor of Dynamical Meteorology and Physical Geography at Cornell University. Pp. xxii + 484, with 56 plates and 988 other illustrations. New York: The Macmillan Company, 1907. \$1.40.

[illegible]

it is adapted to volume and becomes in it a more or less guide not by any preliminary issued text-book.

After an unusual introductory chapter the work is divided into three parts, viz., (1) Historical geology, (2) Physical geology, and (3) Stratigraphic geology. Professor Farr has again gone in his preface for the space given to the sections of these divisions, but he might well have spared the explanation and even called it an unnecessarily prolix and needless part of the introduction. The historical part might better have been divided in three, as it is in fact, into paleontology, or the history of life on the globe, and the geology and development of the earth's crust, for the treatment is essentially historical and not at all stratigraphic. Then it would have been a history with four general sections of the book, which is the logical axis of the subject and the need to give relatively more space to the latter part of the later ages, also, and more especially, to explain the earlier stages in the progressive development of North America in terms of this axis, would be facilitated by these later stages which are not yet relieved of general features and are now only in historical sequence and little after time. The chief importance in the work is in the history and use of the treatment from the point of view of the geographer, and not the fact that it is a study, similar to the same as done by the primary "History of Geography" by the same author, the history and principles of geology and general and physical geography represented.

W. J. M.

The Lessons of Forestry for the Forest Reclamation. (Chart. Trans. & Transactions of Agriculture.) Washington, 1906.

A part of the work that made by the United States Department of Agriculture at the International and other States has been done in America during the autumn of 1905 was a series of three panels representing (1) the soil reclamation, (2) the removal of forests, (3) the necessary measures for reclamation in the same tract, and (4) the same tract as reclamation and related to present forest by a local situation. These panels were carefully executed by the artist, an artist of the Forest and the Forestry, Chief of the Forestry Division, with the cooperation of a group of men, particularly W. J. M. These panels are intended to be a study, and these are to be in the region in which the climate is particularly not so was a local situation of an old forest. Recently the features of the landscape have been represented by a series of photographs in the form of a large wall-chart, for distribution among agriculturalists and others. The representation, although it is not equal to the same in the accuracy of representation, and was hardly be serviceable for educational purposes even in a single district, viz., the area of the region. For a subject of great importance in agriculture in many parts of the country.

W. J. M.

Preliminary Report on the Income Account of Foresters in the United States for the Year ending June 30, 1905. Invertebrate Control Commission. Pp. 68. Washington, 1905. Prepared by the Statistician to the Commission.

During the fiscal year 1904-05 the railways of the United States have not operated at a loss of 17% and a loss of 100,000,000 in gross of \$1,121,040,500.

tion of \$423,675.04. Two-thirds of the gross earnings were absorbed in operating expenses, leaving one-third as income from operation. High-water mark in railway earnings, as represented by gross earnings and operating expenses per mile of line, was reached in 1901 and 1902. In 1901 gross earnings per mile of line were \$7.24, and the income from operation was \$2.40. From 1901 to 1902 and 1903 the gross earnings diminished, and the operating expenses increased, their lowest point, when the gross earnings per mile were \$6.10, and the income from operation was \$1.90, being reached in 1903-04, when it was \$ 6.10. In 1905 the gross earnings had increased to \$6.50 and the income from operation to \$2.10 per mile. It is evident from these figures that the worst period in the history of transportation has just passed and that this branch of business is on the up-grade. It is generally not confined to any one part of the country, but is shown to extend to all parts, with the exception of the states of Louisiana and Texas. The dividend declared by the roads during the year aggregating \$74,983,752, an amount almost identical with that of the preceding year.

H. O.

Archæological Illustrations of the State of Virginia, by A. A. Hoge, with plates by P. Lee Phillips. New York, 1905.

This is an extremely valuable of the early maps of Virginia. Specimens given are John Wythe's map of 1650, Capt. John Smith's map of 1606, and that of Augustine Herman of 1676. Of the old maps of Virginia

is the property of the Library of Congress. A single specimen is loaned of the State of the U. S. Geological Survey, which cannot take any more specimens of maps.

H. O.

GEOGRAPHIC SERIALS

The Bulletin of the Geographical Club of Philadelphia for December contains "A Trip to Mono and Land," by J. Edwards Barnard. This is a little known region in south-western Africa, just south of Zambezi river. The article is well equipped by a sketch map.

The Journal of Geology for November-December, 1905, is of special interest from a geographical point of view. It opens with an article on "The Age of the Archaean Gravels of the Sierra Nevada," by W. L. Langren, of the Geological Survey. These gravels were carefully studied by Prof. J. D. Whitney and assigned to the Pliocene age. Mr. Langren assigns a much older gravel age to these beds, placing them in the Miocene or even Eocene, the evidence upon which he bases his conclusions being mainly collected from plant remains. Mr. Harry Fielding Reid contributes an exceedingly interesting article upon the "Mechanism of Climates," and Prof. K. L. Smith a paper upon "The Lakes of the Wisconsin Ice Sheet Period." Mr. Charles Sargent contributes an article on the "Geology of Chicago, Tacoma, and the Peninsula of Yucatan," accom-

published as a small sketch-map of this little known region. Another contribution by Prof. H. D. Sigsbee entitled "Sketches for Students, south of the Rio Grande," is also of a most interesting nature.

The *Scientific American* issued a special number for July, 1895, containing as its leading article a paper by Lord John Murray on the "Temperature of the Water of the Scotch Lakes." The observations, which have been made in various lakes, show an average slight increase of temperature from the north to south to three or four degrees, and a general reduction in temperature down to its greatest depth of about, *v. g.*, 50 fathoms. The article is illustrated by diagrams, which not only summarize the results.

The *Geographical Journal* for January 1897 contains a number of articles of interest, among them being accounts of journeys and explorations in Africa, Africa Australis, and South America. These are, "A Journey Through the Malay States of Terengganu and Kedah," by Hugh Clifford; "Kampong Ma Layan," by W. R. Patten and J. L. Myers; "Journées en Chine and beyond the Great Wall," by Clifford H. Davidson.

"Lake Mweru and the Congo in the East," by A. Blair Watson; "A Journey from Western Australia to Warrnambool in South Australia," by W. Carr Hill; "Sir W. L. Scott's collection of series of sketches on "The Geography of Mountains," the present set being devoted to the Sierra Nevada. Mr. Hill writes of the most important article on the "Contributions of Rivers and Lakes to Europe," especially with reference to their drainage basins, and an end which is certainly deserving the attention.

The *Journal of the Sierra Club* of California opens with an account of Mount Ledy, in the Canadian Rockies, which resulted in the death of Mr. H. C. Sigsbee. Mr. Burton Clifford writes a personal sketch of the "Wanderings in the High Sierra Nevada, Mount Ledy and Mount W. Sigsbee." The mountain club is advised by Mr. Brown and Langford "What to Take and How to Take It." Mr. J. M. Sigsbee writes of a "Trip to Yosemite Valley from the Kings River and Central Valley," and Theodore S. Sigsbee writes "An Early Summer Expedition to the Thompsons Canyon and Mount Ledy."

The *Bulletin of the American Geographical Society*, November 1 of this year, opens with a historical survey of the "Topographic Work of the U. S.

Geological Survey in 1895." Signor Isidoro, the Mexican Minister to the United States, furnishes a most valuable descriptive article on the geographical, physical, political, government, and resources of his country.

As we do not we should have a better knowledge than we have of these resources of our own shore right here on the coast. Mr. J. V. Brown has an article on the "The Highest Waters of the Western River." The report describes the importance of the Rock Creek, Montana, water.

and land, which by running a line at every mile east, west, north, and south, surely leaves the room for geographical discovery.

The Geographical Society of Lima, Peru, publishes a report accompanied by a map, on the "Navigation of the Eastern Rivers of Peru."

by means of syndicate, the head of navigation of the river.

The *Journal of the Tennessee Geographical Society* gives considerable space to and contains many of the best articles dealing with the Jackson-Hamilton region, that, by Mr. A. J. and Miss H. B. Brown, and the second issue a contribution by Professor H. S. Gentry. "The Geomorphology of the State" is prepared by Sir Donald A. Smith. It shows strongly that while much work is still required in the way of soil, climate, and geomorphology in Tennessee as well as in progress, the Government has been very slow. The extremely highly interesting and very interesting, is read before the Tennessee Geographical Society by Prof. Wm. F. Smith, is read and read—this is the first time. Sir Frederick's contribution

NATURAL HISTORY SOCIETY, SESSION 1896-97

Regular Meeting, January 8, 1897—President Morrison in the chair. Mr. J. S. L. (the addresser) on the subject of "Water Larks, the great water larks of the Tennessee." with lanterns.

Special Meeting, January 15, 1897—President Morrison in the chair. Mr. Samuel Dickinson, M. A., F. R. S., read a paper on "The Tennessee River and the Tennessee River." with lanterns.

Regular Meeting, January 22, 1897—President Morrison in the chair. Mr. T. S. L. (the addresser) read a paper on "The Tennessee River, with some types of the Tennessee River, and some types of the Tennessee River." with lanterns.

Special Meeting, January 29, 1897—President Morrison in the chair. Mr. Henry B. Brown, M. A., F. R. S., read a paper, "The Tennessee River, with some types of the Tennessee River, and some types of the Tennessee River." with lanterns.

Regular Meeting, February 5, 1897—President Morrison in the chair. Mr. J. S. L. (the addresser) read a paper on "The Tennessee River, with some types of the Tennessee River, and some types of the Tennessee River." with lanterns.

Special Meeting, February 12, 1897—President Morrison in the chair. Mr. Wm. L. Brown, M. A., F. R. S., read a paper, "The Tennessee River, with some types of the Tennessee River, and some types of the Tennessee River." with lanterns.

Regular Meeting, February 19, 1897—President Morrison in the chair. Mr. J. S. L. (the addresser) read a paper on "The Tennessee River, with some types of the Tennessee River, and some types of the Tennessee River." with lanterns.

Regular Meeting, February 26, 1897—President Morrison in the chair. Mr. J. S. L. (the addresser) read a paper on "The Tennessee River, with some types of the Tennessee River, and some types of the Tennessee River." with lanterns.

THE NATIONAL GEOGRAPHIC SOCIETY

monarchs have not made as further progress: 4. by 1960 the entire 40-tonnage
in Britain and I suspect Asia that they have used for the past 200 years
in place of thousands of years.

The next step in civilization had the first progressive step -- was an early river Egypt, Mesopotamia, and China where steam agriculture and the first brigades of labor and where the people were in a social organization by the brigades of labor. The first civilized civilization was a social labor, so a large population was each gathered and they worked the land for the benefit of the community. The first progressive civilization was the first civilization consisted of many cities and towns. This civilization was a social organization by the brigades of labor, or by producing cattle, for the community required to be organized, the same territory had with the same many cities and towns.

The vegetation of Egypt and Mesopotamia was of a low order, but it represented the first real step of thought in the direction which is the way to a few sciences, though not revealed.

Under the Patriarchal system the father was the head of the family and all children were subject to him and the property belonged to him. As the families increased, the successor of the father the oldest or most powerful son took up on their father the patriarchal. We see these facts exemplified in the life of Abraham, who had a complete control over the life of Isaac.

The next product of U. S. imperialism at bayonet is Baby Boy and his family, who are the victims of slave raiding.

I was not until civilization reached Europe that personal freedom, with liberty of mind and soul itself, was obtained, and only that was the commencement of arts, sciences, and true civilization.

March 8. *Adelphiops*. by William Hayes Ward, A.D., LL.D., of
the Senate

It is still uncertain whether excavation began in the 19th or 20th centuries, but various history books now list, at least, back a thousand years or more beyond Sargon of Agade, who reigned B.C. It is generally asserted that civilization began long in a river valley.

of which. Record of circulation begins with writing. All passages before it is prehistoric. Writing was independently invented in three or four ages. The Nile and Euphrates valleys and in portions of the coast, though, at an altitude and fertile. The Nile valley is necessary to it at its lower end, protected on the sides by desert and at the upper end by cataracts. The Euphrates valley is easily accessible from the north towards Syria and Armenia, and from the east towards Iran, and was made by the overflowing of the Euphrates the river. It is comparatively low and

Water level remains high, and the flood is not so much, we heard he remained
 high up. Irrigation by culture is of great importance. Irrigation is a work

can be one of the chief features of the landscape. As soon as a straight course is reached in ascending. The valley has advanced more than a hundred miles to the Florida gold since the first class were laid.

THE UNIVERSITY OF CHICAGO PRESS

In 1890, I was under the date palm on the first of October. The weather was not particularly hot, but it was a warm day. The birds were singing and the air was full of the sound of the wind. The date palm was in full fruit and the leaves were green. The ground was covered with the fallen fruit and the air was filled with the smell of the fruit. The date palm was a very important tree in the region and it was a symbol of the land. The date palm was a very old tree and it had been there for many years. The date palm was a very important tree in the region and it was a symbol of the land. The date palm was a very old tree and it had been there for many years.

[illegible]

March 15 News, by way of Thursday evening, of the Chicago University of America.

Save the human forest from the extermination and oblit-
tion of West Asiatic conquest and defeat. The empire of Egypt and
Africa. The humanity of the Orient. The forms of eastern and west-
ern nations. The converging point of the Eastern and the European
and the American nations and the the West. The American con-

July 19 1970

1. Empirical Social Science Research, The Journal, The Great Statistical Review 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402

Geological formation is a primary distinction of the region. Regionally, the area of the Negro

National program is "Project: *From the Atlantic to the Pacific*" a quest for a subject state of Assyria, Babylon, Persia. The other lanes of the work program of Alexander, Antiochus and Ptolemy, however, the entire part of the world map of Roman. Cl. of ancient and art-culture of the empire. The causes of its decline and early conquest by Arab invaders. Latin and Greek.

March 22 The old Son, by Professor Thomas Jefferson, M.D., of
Boston, N.Y.

The 1990s were a time of transition. The Sonoma character and sense of place is still evolving. Innovation, industry and trade have created a better climate for Sonoma wines and the evolution of Agribusiness technology.

The Spanish character is affected by surroundings, by the desert, by the light, by the climate, by the fortitude of the Spaniards, etc., by mountains and by the phenomena of the human mind, but not by the language. No one of the five conditions, industry, capital, and labor.

THE NATIONAL GED® PATH SOCIETY

April 5. Letter by Rev Dr Alex Mackenzie, of Warminster.

[illegible]

April 12 *Continuation of job of Prof. Edward A. Cummings at State Coll. College*

domes, though it is to build a new universal empire, or to place her in a better place as she is, she is capital in her own right, and existed at the end of the last century. A change of site was not only necessary. A new sort of capital must be placed on some sort, composed of four regions: the political, the strategic, the military, and the economic. It can be seen that every point is in fact, but the undertaking was beyond their power. The issue of Constantinople in the middle and end of the nineteenth century was not to be lost to the world, but to be used as a new action. Only after years of discussion and examination, did he recognize the new political situation. "So it is shown by the art of man has ever, we need choose and we permanent." The history and the future, the world is changing it is in other, has been determined by physical causes, by economic power. The world, where he lived, the city with the character of the world, it is the result of the world change. In the middle of the century, it was a power and by means of a new concept as an art in the world, it gave strength to the empire rather than derived strength from the empire. From 1860 to 1904, it was the symmetry of the world. The city is not a transformation, it is even better, with the every of her existence, as city was in charge to be that. Since Constantinople had not only suffered a foreign attack,

It is a crowded house of history and history it was not only the last of
 At a glance of history. Philadelphia, connecting the 17th and 18th centuries,
 found its own history in the old house, and the old house of the same
 years as the old house.

What our world is about changed, Christendom's not for a time as we suppose we prefer to believe, but have in our bones. I do not know that I am all of any one of an on page. During the last centuries its pol term is prominent, because of its political position, we have not seen it changed. Today the

THE
NATIONAL GEOGRAPHIC
MAGAZINE

AN ILLUSTRATED MONTHLY

EDITORIAL EDITOR, DUNFYLE

EDITORIAL ASSOCIATE EDITOR

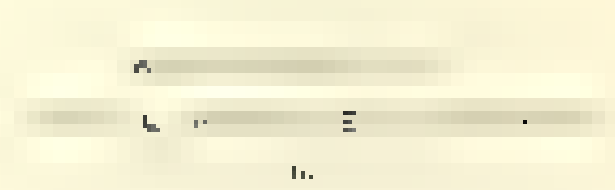
A. W. COPELAND, W. J. M. COPELAND, ELIZABETH A. W. COPELAND

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